



Designation: D7832/D7832M – 14 (Reapproved 2021)

Standard Guide for Performance Attributes of Waterproofing Membranes Applied to Below-Grade Walls / Vertical Surfaces (Enclosing Interior Spaces)¹

This standard is issued under the fixed designation D7832/D7832M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This guide lists test methods intended to establish a minimum level of acceptable performance attributes for reinforced or laminated waterproofing membranes applied to below-grade walls.

1.2 This guide does not include cementitious, integral, or bentonite waterproofing systems.

1.3 This guide does not include membranes applied under slabs on grade or on suspended slabs below grade or applied to soil retaining systems, water containment structures, or tunnels.

1.4 It is not possible to establish a precise correlation between laboratory tests on waterproofing membranes and performance attributes after installation due to variations in chemicals in the soil, design, material, and installation.

1.5 The values stated in either inch-pound or SI units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the standard.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.7 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This guide is under the jurisdiction of ASTM Committee D08 on Roofing and Waterproofing and is the direct responsibility of Subcommittee D08.22 on Waterproofing and Dampproofing Systems.

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2. Referenced Documents

2.1 ASTM Standards:²

- C1305/C1305M Test Method for Crack Bridging Ability of Liquid-Applied Waterproofing Membrane
- C1522 Test Method for Extensibility After Heat Aging of Cold Liquid-Applied Elastomeric Waterproofing Membranes
- D95 Test Method for Water in Petroleum Products and Bituminous Materials by Distillation
- D471 Test Method for Rubber Property—Effect of Liquids
- D543 Practices for Evaluating the Resistance of Plastics to Chemical Reagents
- D570 Test Method for Water Absorption of Plastics
- D896 Practice for Resistance of Adhesive Bonds to Chemical Reagents
- D903 Test Method for Peel or Stripping Strength of Adhesive Bonds
- D1079 Terminology Relating to Roofing and Waterproofing
- D1204 Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheet or Film at Elevated Temperature
- D1790 Test Method for Brittleness Temperature of Plastic Sheet by Impact
- D4551 Specification for Poly(Vinyl Chloride) (PVC) Plastic Flexible Concealed Water-Containment Membrane
- D5147/D5147M Test Methods for Sampling and Testing Modified Bituminous Sheet Material
- D5385/D5385M Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes
- D5636/D5636M Test Method for Low Temperature Unrolling of Felt or Sheet Roofing and Waterproofing Materials
- D5683/D5683M Test Method for Flexibility of Roofing and Waterproofing Materials and Membranes
- D5849/D5849M Test Method for Evaluating Resistance of Modified Bituminous Roofing Membrane to Cyclic Fatigue (Joint Displacement)

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

D6134/D6134M Specification for Vulcanized Rubber Sheets Used in Waterproofing Systems

D7234 Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers

D7281 Test Method for Determining Water Migration Resistance Through Roof Membranes

E154/E154M Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover

E1745 Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs

2.2 International Code Council:³
International Building Code

3. Terminology

3.1 For definitions relating to waterproofing, refer to Terminology D1079.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *perform*—the ability of all essential properties to meet or exceed specified test values.

3.2.2 *protection course*—prefabricated boards, drainage composites, sheets, or insulation applied to the positive surface of the membrane to protect it from damage from backfilling and construction operations.

3.2.3 *waterproofing membrane*—a single or multiple-ply membrane, factory manufactured or liquid applied and which is internally reinforced or laminated to a plastic sheet. It is intended to prevent the passage of liquid water under continuous or intermittent hydrostatic, dynamic, or static pressure. The membrane is fully or partially attached, and is applied to the positive or wet side of a vertical substrate below-grade.

4. Significance and Use

4.1 A waterproofing membrane should maintain its watertight integrity for the life of the building in a continuously or intermittently moist environment and may be subject to continuous or intermittent hydrostatic pressure. It should resist chemicals that can harm the membrane and root growth. This guide lists minimum performance attributes required of waterproofing membranes applied to below-grade walls. Products not previously used as waterproofing membrane materials require additional tests beyond the scope of this guide. This guide is not intended for use on in-service waterproofing materials. Waterproofing membranes and other components should conform to ASTM product standards, if available.

³ Available from International Code Council (ICC), 500 New Jersey Ave., NW, 6th Floor, Washington, DC 20001, <http://www.iccsafe.org>.

4.2 *Limitations*—Prior to use and in service, waterproofing may be exposed to a variety of conditions so no one test will provide evaluations related to performance for all exposures. Neither will all tests be necessary in all evaluations for specific exposures.

5. Waterproofing Membrane Classifications

5.1 *Type of Material:*

5.1.1 *Type I*—Bituminous.

5.1.1.1 *Grade 1*—Single or multiple ply adhered.

5.1.1.2 *Grade 2*—Liquid-applied.

5.1.2 *Type II*—Non-bituminous organic.

5.1.2.1 *Grade 1*—Single ply.

(1) *Class 1*—Adhered sheet.

(2) *Class 2*—Partially attached sheet.

5.1.2.2 *Grade 2*—Liquid-applied (polyurethane, polymethyl methacrylic, polyester, polyether).

6. Waterproofing Membrane Performance Attributes

6.1 The following general attributes are required for a waterproofing membrane:

6.1.1 Perform under continuously moist conditions and alternate wetting and drying.

6.1.2 Perform under hydrostatic pressure.

6.1.3 Resist acids, alkalis, and other chemicals including such as those commonly contained in fertilizers and soil poisoners.

6.1.4 Resist fungus and bacteria in soils.

6.1.5 Possess low water absorption.

6.1.6 Resist puncture for membranes that lack a protection course.

6.1.7 Possess a moderate degree of elongation and elasticity.

6.1.8 Possess sufficient flexibility to enable unrolling or curing properly without failure. (Not required for Type I, Grade 1 or Type II, Grade 2.)

6.1.9 Possess crack-bridging capabilities.

6.1.10 Adhere tenaciously to the substrate.

7. Design of Waterproofing Assembly

7.1 *Waterproofing Membrane*—The waterproofing membrane may be single-ply or multi-ply or a reinforced film of one or more component liquid-applied materials, depending on the materials involved. Where applicable, the properties of the waterproofing membrane shall meet or exceed the minimum values shown in **Tables 1-3**.

7.2 The membrane material selected for use shall pass the tests outlined in **Table 1**, modified to reflect the below-grade conditions anticipated for the locality of use (see **4.2**).